

REMARKS

Applicant is in receipt of the Office Action mailed September 23, 2004.

Objections

Claim 16 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 15. Claim 16 is cancelled.

Art Rejections

Claims 1-25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Foran et al. USPN 6,072,500, hereinafter referred to simply as Foran.

Claim 1 recites: A graphics system comprising:

a graphics processor configured to generate a plurality of samples that are rendered with a variable density of samples per pixel, wherein the density varies with pixel location, and wherein the graphics processor generates at least a portion of the plurality of samples in a super-sampled manner;

a sample buffer coupled to said graphics processor for storing the plurality of samples having the variable density, wherein the plurality of samples comprised in the sample buffer correspond to an entire frame of a display;

and

a sample-to-pixel calculation unit coupled to said sample buffer, wherein said sample-to-pixel calculation unit is configured to select and filter said stored samples to form output pixels, wherein the output pixels correspond to the entire frame of the display.

Foran neither teaches nor implies “a graphics processor configured to generate a plurality of samples that are rendered with a variable density of samples per pixel, wherein the density varies with pixel location”.

Foran does teach that the number of samples per pixel may be any of the values 4, 8, or 16 in column 7, lines 8-13:

“More specifically, with respect to FIG. 6a, **pixel memory 70 includes** color values for a front frame buffer 74 and a back frame buffer 76, a 2-bit mode indemnifiers 78 (as will be further explained below), a region mask 80 (also explained below), and **either four, eight or sixteen supersamples** 82.”

However, Foran does not teach or suggest varying the density of samples per pixel as a function of the pixel location, or on a per-scan line basis, a per-group-of-scan-line basis, a per-region basis, or a per-group-of-pixels basis. In fact, the words “density” or “variable” do not occur in the Foran patent. A search for the word “vary” yields only one occurrence of “varying color values” in column 8, line 23.

Foran also teaches the use of region masks. However, a region mask applies to a particular pixel only. The region mask indicates which of two adjacent polygons that cover the particular pixel determines the color of a specific sample located within the screen area corresponding to the particular pixel. This is discussed at length in Foran, and specifically at column 8, lines 4-22:

“As previously mentioned, the region mask 80 is distinguished from the supersample coverage mask in that the coverage mask only identifies the coverage of a particular polygon with respect to a particular pixel whereas the **region mask** 80 is based on the preset coverage mask, and any relevant prior coverage mask, and **identifies the supersamples within a particular pixel that are covered by each of up to two polygons**. The Smask and Zmask are intermediate masks between the coverage mask and the region mask.

When reviewing the following description, it is important to remember that it is the duty of the image processor 60, when necessary, to generate Z-values and color values at each of the supersampled points within the pixel. It should also be noted that in the preferred embodiment of the present invention, no interpolation is done to derive color values for each supersample, although such interpolation could be performed. Hence, the same color value is used for all

sample locations covered by a polygon responsible for generating the color value.”

The region mask as taught by Foran is in no way used to adjust the number of samples per pixel.

Therefore, Applicant submits that claim 1 and its dependent claims are non-obvious and patentably distinguished over Foran for at least the reasons given above. Applicant further submits that the independent claims 19, 22, and 24 contain limitations similar to claim 1, and therefore, claims 19, 22, and 24 and their dependent claims are also non-obvious and patentably distinguished over Foran based on similar reasoning.

CONCLUSION

Applicant submits the application is in condition for allowance, and an early notice to that effect is requested.

If any extensions of time (under 37 C.F.R. § 1.136) are necessary to prevent the above referenced application(s) from becoming abandoned, Applicant(s) hereby petition for such extensions. If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert & Goetzel PC Deposit Account No. 50-1505/5181-09612/JCH.

Also enclosed herewith are the following items:

- ☒ Return Receipt Postcard
- ☐ Request for Approval of Drawing Changes
- ☐ Notice of Change of Address
- ☐ Check in the amount of \$ for fees ().
- ☐ Other:

Respectfully submitted,



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